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(54) **METHODS FOR SULFATE REMOVAL IN LIQUID-PHASE CATALYTIC HYDROTHERMAL GASIFICATION OF BIOMASS**

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This patent is subject to a terminal disclaimer.

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(58) **Field of Classification Search**
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See application file for complete search history.

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(57) **ABSTRACT**

Processing of wet biomass feedstock by liquid-phase catalytic hydrothermal gasification must address catalyst fouling and poisoning. One solution can involve heating the wet biomass with a heating unit to a pre-treatment temperature sufficient for organic constituents in the feedstock to decompose, for precipitates of inorganic wastes to form, for preheating the wet feedstock in preparation for subsequent removal of soluble sulfate contaminants, or combinations thereof. Processing further includes reacting the soluble sulfate contaminants with cations present in the feedstock material to yield a sulfate-containing precipitate and separating the inorganic precipitates and/or the sulfate-containing precipitates out of the wet feedstock. Having removed much of the inorganic wastes and the sulfate contaminants that can cause poisoning and fouling, the wet biomass feedstock can be exposed to the heterogeneous catalyst for gasification.

20 Claims, 2 Drawing Sheets